What is claimed is:

1. A shape descriptor extracting method comprising: (a) extracting a skeleton of an image and determining a shape descriptor based on the extracted skeleton.

2. A shape descriptor extracting method comprising:

(a) extracting a skeleton from an input image;

(b) obtaining a first list of straight lines by connecting pixels based on the extracted skeleton; and

(c) determining a second list of straight lines obtained by normalizing the first list of straight lines as a shape descriptor.

3. The method of claim 2, wherein the step (a) comprises:

(a-1) obtaining a distance map by performing a distance transform on the input image; and

(a-2) extracting the skeleton from the obtained distance map.

4. The method of claim 2, wherein the step (b) comprises:

(b-1) thinning the extracted skeleton; and

(b-2) extracting the second list of straight lines by connecting respective pixels within the thinned skeleton.

5. The method of claim 2, wherein the step (b) comprises:

(b-1) making a list of starting points and ending points of the

connected lines; and

(b-2) obtaining the first list of straight lines by a straight line combination of the extracted straight lines;

and the step (c) comprises:

(c-1) determining the second list of straight lines, obtained by normalizing the first list of straight lines based on the maximum distance between ending points of respective straight lines, as the shape descriptor.

6. The method of claim 3, wherein the distance transform is based on a function indicating respective points within an object with the minimum distance value of the corresponding point from the background.

7. The method of claim 3, wherein the step (a-2) comprises: obtaining a local maximum from the distance map using an edge detecting method.

8. The method of claim 7, wherein the step (a-2) comprises:

(a-2-1) performing a convolution using a local maximum detecting mask of four directions to obtain the local maximum.

9. The method of claim 8, after the step (a-2-1), further comprising:

(a-2-2) recording a label corresponding to a direction having the

greatest size on a direction map and a magnitude map.

10. The method of claim 2, wherein the input image is a binary image.

11. The method of claim 4, wherein the step (b-1) comprises:

leaving a pixel having the greatest size in a direction rotated by 90-degrees from the corresponding direction on the direction map, and removing the rest of the pixels.

12. The method of claim 8, wherein the step (c-2) comprises:

using the direction map of four directions, and making a list of starting points and ending points of respective line segments by connecting pixels having the same label on the direction map.

13. The method of claim 5, wherein the step (b-2) comprises:

performing a straight line combination by changing threshold values of an angle between the straight lines, a distance, and a length of a straight line from the obtained first list of straight lines.

14. The method of claim 13, wherein the straight line combination is repeated until the number of remaining straight lines becomes equal to or less than a predetermined number.

15. An image searching method, wherein a method for searching for images having similar shapes to a query image

comprises:

(a) obtaining a list of straight lines from a shape descriptor of a query image;

(b) comparing the list of straight lines of a shape descriptor of a detected image with the list of straight lines of the shape descriptor of the query image, and obtaining dissimilarity; and

(c) detecting images having similar shapes to the query image based on the obtained dissimilarity.

16. The method of claim 15, wherein the step (b) comprises:

(b-1) measuring distances between ending points of the straight lines forming a skeleton; and

(b-2) determining the sum of minimum values of the measured distances as the dissimilarity.

17. The method of claim 16, wherein the step (b-1) comprises:

when $Q$ is a straight line for detecting, $M$ is a detected straight line, $S$ is a starting point of any straight line, $E$ is an ending point of any straight line, $N_Q$ is the total number of the straight lines which the shape descriptor of the query image has, $N_M$ is the total number of the straight lines which the shape descriptor of the detected image has, and N is $N = \min\{N_Q, N_M\}$ calculating distances between ending points of the straight lines forming the skeleton according to

$$D_{1k} = \min_{ij} \{ \left\| Q_{S_i} - M_{S_j} \right\| + \left\| Q_{E_i} - M_{E_j} \right\| \}, \quad D_{2k} = \min_{ij} \{ \left\| Q_{S_i} - M_{E_j} \right\| + \left\| Q_{E_i} - M_{S_j} \right\| \},$$

and the step (b-2) comprises:

measuring dissimilarity using a dissimilarity specific function defined as $D = \sum_{k=0}^{N-1} \min\{D_{1k}, D_{2k}\}$.

18. The method of claim 17, wherein a similarity measurement is performed according to the steps (b-1) and (b-2) at regular intervals of a rotating angle to obtain a value which is not changed by the rotation.

19. A dissimilarity measuring method, wherein a method for measuring dissimilarity between images indexed using a shape descriptor formed on the basis of a skeleton comprises:

(a) obtaining a list of straight lines from a shape descriptor of a query image; and

(b) comparing a list of straight lines from a shape descriptor of a detected image with the list of straight lines of a shape descriptor of a query image, and obtaining dissimilarity.